

SERIAL NO.: 10/267,503
ATTORNEY DOCKET NO.: 14206/67498

REMARKS/ARGUMENTS

Claims 1-72 remain in this application, Claims 73-78 have been added.

Claims 1, 25 and 49 have been amended to better describe the present invention and clearly distinguish it from the cited references. Basis for the amendments is as follows:

In Claims 1, 25 and 49, “to provide coordinated movement” may be found in the last sentence of paragraph [0031], “the data signals providing information about dynamics of human locomotion” may be found in the previous to last sentence of paragraph [0035] and “decomposing the locomotion of the individual based on the information provided by the data signals from both the healthy leg and the prosthesis” may be found in the first sentence of paragraph [0036].

Claims 4, 5, 7, 35 and 46 have been amended to correct clerical errors which do not affect the scope of the claims.

Basis for new Claims 73-78 may be found in the last sentence of paragraph [0031].

Rejection under 35 U.S.C. 101

In the Office Action, the Examiner rejected Claims 25-72 under 35 U.S.C. 101 as being directed to nonstatutory subject matter. As suggested by the Examiner, claims 25 and 49 have been amended to use the wording “configured to be”. The Applicant submits that claims 25-72 are now directed to statutory subject matter.

Nonstatutory double patenting rejection

In the Office Action, the Examiner provisionally rejected Claims 1-5, 11-29, 35-53 and 59-72 under the judicially created doctrine of obviousness double patenting as being unpatentable over the claims of copending Application No. 10/600,725.

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The Applicant wishes to file a terminal disclaimer for Claims 1-5, 11-29, 35-53 and 59-72. The portion of the term which is disclaimed is the portion of the term beyond the term of copending Application No. 10/600,725. The Applicant states that the interests in the present patent application and in Application No. 10/600,725 are commonly owned. Any patent granted on the present application or any patent subject to the reexamination proceeding shall be enforceable only for and during such period that said patent is commonly owned with Application No. 10/600,725.

Rejection under 35 U.S.C. 103(a)

In the Office Action, the Examiner rejected Claims 1-5, 11-16, 25- 29, 35-40, 49-53 and 59-64 under 35 U.S.C. 103(a) as being unpatentable over Heath et al. (GB 2 302 949 A). Respectfully, the Applicant disagrees with the Examiner for the following reason.

Currently amended Claim 1 recites:

“A method of controlling an actuating mechanism of a prosthesis provided on one side of the lower body of an individual to provide coordinated movements, the individual having a healthy leg on the other side, the method comprising:

providing a plurality of artificial proprioceptors, at least one of the artificial proprioceptors being on the side of the healthy leg, and at least one of the artificial proprioceptors being provided with the prosthesis;

generating data signals in real time at the artificial proprioceptors, the data signals providing information about dynamics of locomotion of the individual;

decomposing the locomotion of the individual based on the information provided by the data signals from both the healthy leg and the prosthesis; and

generating control signals in real time for controlling the actuating mechanism in response to the locomotion of the individual.” [Emphasis added]

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Heath et al. teaches of a “transducer for sensing skin displacements in response to, for example, muscle contractions.” (page 1, first paragraph) and that the aim of the invention is to “provide an improved transducer for measuring, for example, physiological activity (movement of the human or animal body).” (page 2 last paragraph to page 3 first paragraph). However, it is to be understood that the “movement” Heath et al. teaches about is the movement of muscles under the skin such as taught in the first paragraph of page 5 “It has been observed that an amputee will be able to make muscle movements under the skin of a residual portion of their body when mentally trying to move an amputated portion of their body. Similarly, muscle movements may be observed under the skin of an able body.” Heath et al. teaches away from providing information about dynamics of locomotion of the individual.

Furthermore, the movement analysis Heath et al. teaches about is the analysis of movement of the skin produced by muscle movements, such as taught in the previous to last paragraph of page 8 “For applications involving movement analysis of the skin in response to, for example, muscle movements”. Heath et al. teaches away from decomposing the locomotion of the individual based on the information provided by the data signals from both the healthy leg and the prosthesis and controlling the actuating mechanism in response to the locomotion of the individual.

In view of the above comment, the Applicant respectfully submits that Claim 1 is patentable over Heath et al. Furthermore, the Applicant submits that Claims 2-5 and 11-16 directly or indirectly dependant on allowable Claim 1 are also patentable over Heath et al. for at least the same reason.

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Currently amended Claim 25 recites:

“A device for controlling an actuating mechanism of a prosthesis provided on one side of the lower body of an individual to provide coordinated movements, the individual having a healthy leg on the other side, the device comprising:

a plurality of artificial proprioceptors, at least one of the artificial proprioceptors being configured to be positioned on the side of the healthy leg, and at least one of the artificial proprioceptors being configured to be positioned on the side of the prosthesis;

means for generating data signals in real time at the artificial proprioceptors, the data signals providing information about dynamics of locomotion of the individual;

means for decomposing the locomotion of the individual based on the information provided by the data signals from both the healthy leg and the prosthesis; and

means for generating control signals in real time for controlling the actuating mechanism in response to the locomotion of the individual.” [Emphasis added]

For at least the same reasons as for amended Claim 1, the Applicant submits that Heath et al. teaches away from providing information about dynamics of locomotion of the individual, decomposing the locomotion of the individual based on the information provided by the data signals from both the healthy leg and the prosthesis and controlling the actuating mechanism in response to the locomotion of the individual.

The Applicant therefore submits that Claim 25 is patentable over Heath et al. Furthermore, the Applicant submits that Claims 26-29 and 35-40, directly or indirectly dependant on allowable Claim 25 are also patentable over Heath et al. for at least the same reason.

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Currently amended Claim 49 recites:

“A lower extremities prosthesis configured to be provided on one side of the lower body of an individual to provide coordinated movements, the individual having a healthy leg on the other side, the prosthesis comprising:

a plurality of artificial proprioceptors, at least one of the artificial proprioceptors being configured to be positioned on the side of the healthy leg, and at least one of the artificial proprioceptors being provided with the prosthesis;

means for generating data signals in real time at the artificial proprioceptors, the data signals providing information about dynamics of locomotion of the individual;

means for decomposing the locomotion of the individual based on the information provided by the data signals from both the healthy leg and the prosthesis;

at least one actuating mechanism; and

means for generating control signals in real time for controlling the actuating mechanism in response to the locomotion of the individual.” [Emphasis added]

For at least the same reasons as for amended Claim 1, the Applicant submits that Heath et al. teaches away from providing information about dynamics of locomotion of the individual, decomposing the locomotion of the individual based on the information provided by the data signals from both the healthy leg and the prosthesis and controlling the actuating mechanism in response to the locomotion of the individual.

The Applicant therefore submits that Claim 49 is patentable over Heath et al. Furthermore, the Applicant submits that Claims 50-53 and 59-64, directly or indirectly dependant on allowable Claim 49 are also patentable over Heath et al. for at least the same reason.

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In the Office Action, the Examiner rejected Claims 1-72 under 35 U.S.C. 103(a) as being unpatentable over Schulman et al. (US 2002/0198604 A1). Respectfully, the Applicant disagrees with the Examiner for the following reason.

Schulman teaches of a "system of implantable devices, preferably battery-powered, that monitor and/or affect parameters of a patient's body and interfaces to a prosthetic device, e.g. an artificial limb" (paragraphe [0006]). Schulman also teaches that an electromechanical prosthetic device can be physically connected to the patient via a "wireless communication link 350 to one or more of the aforescribed implantable devices" (paragraph [0046]). Schulman only teaches of implantable devices that can be used to interface with the human body, it does not teach or suggest using proprioceptors positioned on both a healthy leg and a prosthesis to provide information about the locomotion of an individual. i.e. Schulman teaches of an implantable device that "stimulates a neural pathway, i.e., a nerve, to provide sensory data back to the patient" (paragraph [0046]). Furthermore, Figures 6 and 8 show examples of the interface of an arm prosthesis with the human body, which a person skilled in the art knows to be completely different from using data signals, from both the healthy leg and the prosthesis, to provide information about the dynamics of locomotion of the individual in order to provide coordinated movement of that individual, i.e. coordination of movement of the leg prosthesis and the healthy leg.

Thus, Schulman teaches away from providing coordinated movements, data signals providing information about dynamics of locomotion of the individual, decomposing the locomotion of the individual based on the information provided by the data signals from both the healthy leg and the prosthesis or controlling the actuating mechanism in response to the locomotion of the individual.

The Applicant therefore submits that Claim 1 is patentable over Schulman et al. Furthermore, the Applicant submits that Claims 2-24, directly or indirectly dependant on allowable Claim 1 are also patentable over Schulman et al. for at least the same reason.

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For at least the same reasons as for amended Claim 1, the Applicant submits that Schulman teaches away from providing coordinated movements, data signals providing information about dynamics of locomotion of the individual, decomposing the locomotion of the individual based on the information provided by the data signals from both the healthy leg and the prosthesis or controlling the actuating mechanism in response to the locomotion of the individual.

The Applicant therefore submits that Claim 25 is patentable over Schulman et al. Furthermore, the Applicant submits that Claims 26-48, directly or indirectly dependant on allowable Claim 25 are also patentable over Schulman et al. for at least the same reason.

For at least the same reasons as for amended Claim 1, the Applicant submits that Schulman teaches away from providing coordinated movements, data signals providing information about dynamics of locomotion of the individual, decomposing the locomotion of the individual based on the information provided by the data signals from both the healthy leg and the prosthesis or controlling the actuating mechanism in response to the locomotion of the individual.

The Applicant therefore submits that Claim 49 is patentable over Schulman et al. Furthermore, the Applicant submits that Claims 50-72, directly or indirectly dependant on allowable Claim 49 are also patentable over Schulman et al. for at least the same reason.

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Applicant submits that Claims 73-78, directly or indirectly dependant on allowable Claims 1, 25 and 49 are also patentable over Heath et al. and Schulman for at least the same reason.

Conclusion

The claims have been shown to be allowable over the prior art. Applicant believes that this paper is responsive to each and every ground of rejection cited by the Examiner in the Office Action dated August 30, 2005, and respectfully requests favorable action in this application. The Examiner is invited to telephone the undersigned, Applicant's attorney of record, to facilitate advancement of the present Application.

The applicant herewith petitions the Commissioner of Patents and Trademarks to extend the time for reply to the Office Action dated August 30, 2005 for three months. Please charge deposit account number 04-0932 (Reference Number 14206/67498), in the amount of \$2,160 to cover the cost of the extension. Any deficiency or overpayment should be charged or credited to the above numbered deposit account.

Respectfully submitted,

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